


REMARKS/ARGUMENTS

These changes have been made to reflect the changes in the International Application. Applicants request consideration of the modified claims.

Respectfully submitted,

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DRAWINGS

Please amend Fig 2 as indicated in replacement sheet.

Applicants submit that the above changes to the drawings are made to correct typographical errors and add no new matter to the application.

RECORDING AND REPRODUCING APPARATUS AND RECORDING METHOD

This application is a 371 U.S. National Stage filing of PCT/JP2004/014806, filed September 30, 2004, which claims priority to Japanese Patent Application Number JP2003-345060, filed October 2, 2003, both of which are incorporated herein by reference.

Technical Field

The present invention relates to a recording/reproducing apparatus and a recording/reproducing method in which various data such as AV data is managed as files, and more particularly to a recording/reproducing apparatus and a recording method suitable when using as a recording medium a disk or the like having data transfer rates differed according to access positions of the disk.

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Background Art

A FAT file system is a file system used by external storage apparatus of PC, such as a hard disk drive (HDD) and media using a solid state memory as a recording medium (Memory Stick (registered trademark) manufactured by Sony Corporation, SmartMedia (registered trademark) manufactured by Toshiba Corporation, CompactFlash (registered trademark) manufactured by SanDisk Inc. and MultiMediaCard, etc.).

The FAT file system uses a FAT (File Allocation Table) indicating that each file is located at which position of a recording medium, and two data: a file attribute and a directory item indicating that each file exists at which position of the directory.

An area dedicated to a FAT and a root directory is usually provided in a recording medium. A PC (Personal Computer) receives these information necessary for file access via a PC interface (SCSI, IDE, IEEE1394, USB, etc.) and executes recording/reproducing control in accordance with the received

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(MARKED-UP VERSION)

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Fig. 4 is a diagram showing an example of a command for setting parameters for data write.

Best Mode for Carrying out the Invention

5 An embodiment of the present invention will be described below with reference to the accompanying drawings.

Fig. 1 is a diagram showing the structure of a recording/reproducing apparatus according to the embodiment of the present invention.

10 This recording/reproducing apparatus is a hard disk drive (hereinafter called "HDD") 1 using a hard disk (hereinafter called "disk") 10 and, adopts as a file system an MS-DOS compatible FAT file system.

 The HDD 1 is connected to a host apparatus 3 such
15 as an AV apparatus via an interface 2 such as IDE (Integrated Drive Electronics), SCSI (Small Computer System Interface), FC (Fibre Channel) and USB (Universal Serial Bus). An interface control unit 4 of the HDD 1 receives a command issued from the host apparatus 3 via the interface 2, comprehends
20 its contents and notifies a CPU 5 (Central Processing Unit) [[5]] in the HDD 1. In accordance with the notified contents, the CPU 5 sets commands and parameters necessary for a hard disk control unit 6, a read/write channel unit 7 and a servo control unit 8 to execute their operation.

25 The servo control unit 8 controls driving of a spindle motor 9 for driving and rotating the disk 10 and a voice coil motor 11 for feeding a head (not shown) for reading/writing signals from/to the disk 10 in a radial direction of the disk 10, to thereby move the head to
30 predetermined track and sector. The read/write channel unit 7 encodes (modulates) user data sent during data write to the

(MARKED-UP VERSION)

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the host apparatus 3 of transfer to the AV mode (Step 303).

When a particular write request operation such as continuous imaging by a digital camera is executed in the host apparatus 3, the host apparatus 3 determines a file name (File
5 1) of content data to be written, newly forms directory items and writes the items in the HDD 1. The directory items written at this time are only a start cluster address and a latest update time, which are incomplete as directory items.

The HDD 1 references FAT retained in the memory 13,
10 selects a proper cluster from empty clusters, and writes the directory information in the selected cluster (Step 304). After the directory information is written, the address is notified to the host apparatus 3.

Next, the host apparatus 3 sets parameters necessary
15 for writing content data. Specifically, a start cluster address, access size and the like of a file are determined. Although the host apparatus 3 defers management of FAT to HDD, the start cluster address is required to be shared in order to identify the file. Fig. 4 shows an example of the command
20 (Set Rec Parameter) for executing sharing. The command is defined as a vendor unique command of ~~AT~~ FAT, and executed only once prior to writing the file.

Of bits defined in a Feature register in the command, an OP (Outer Position) and an IP (Inner Position) designate
25 from which of the outer side or inner side of the disk 10 the HDD 1 takes the record start cluster. If bits of both OP and IP are 0, a start cluster address set in a Sector Count register or the like becomes valid.

In order to execute data write to the HDD 1 by using
30 the disk cache area, the host apparatus 3 notifies the HDD 1 of use permission of the disk cache area in the file unit.

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When a particular write request operation such as continuous imaging by a digital camera is executed in the host apparatus 3, the host apparatus 3 determines a file name (File 1) of content data to be written, newly forms directory items and writes the items in the HDD 1. The directory items written at this time are only a start cluster address and a latest update time, which are incomplete as directory items.

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In order to execute data write to the HDD 1 by using the disk cache area, the host apparatus 3 notifies the HDD 1 of use permission of the disk cache area in the file unit. To this end, the command is executed by setting "1" to a QW